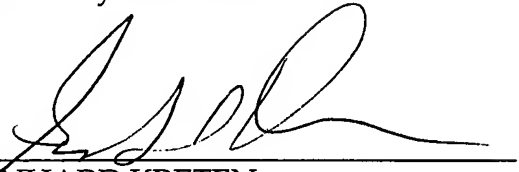


In view of the foregoing, it is respectfully requested that the Examiner enter these amendments to this case.

Dated: February 1, 2002

Respectfully Submitted:

A handwritten signature in black ink, appearing to read 'B. Kreten', written over a horizontal line.

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10061773-020102



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE OF THE INVENTION

Combustible Fuel Composition and Method

This application is a continuation-in-part of application number 09/881,310, filed

June 13, 2001, status: pending.

FIELD OF THE INVENTION

The following invention is generally related to instrumentalities and methodologies in combustible fuels. More specifically, the instant invention is directed to a method and apparatus for a combustible fuel that is easily lit by an external ignition source and is resistant to deterioration of effectiveness, thereby having a long shelf life.

BACKGROUND OF THE INVENTION

Many efforts have been made to produce fuels for barbecuing that are clean-burning, easy to handle, and easily ignitable. Charcoal, usually made from a wood base, is the most common component of fuels for barbecuing. Charcoals having vegetable and coal bases have also been used. Such fuels are difficult to ignite for cooking and often require the use of an ancillary flammable material, such as lighter fluid or newspaper, to create a flame of sufficient duration for the charcoal to ignite.

Previous innovations have involved the impregnation of charcoal with a more flammable compound, such as lighter fluid (or other volatile fluids, such as higher alkanes), waxes, or other oxidants that burn faster and more readily than charcoal. These penetrate only the outer surface of the charcoal. Those including volatile components or that are very easily oxidized are susceptible to dissipation over time, greatly reducing the effectiveness of those fuels. Other processes create a mixture of charcoal and an ignitable material, ultimately forming a homogeneous material that, overall, should be easier to burn. The point, however, of utilizing easily ignitable material is to achieve the initial burning of the charcoal. Once the charcoal reaches a certain level of combustion, it burns without further aid. Mixing the ignitable component throughout the fuel adds little overall benefit, because the benefits of ancillary ignitable components are superfluous once the combustion of the charcoal is underway. The use of volatile or easily combustible components throughout such fuels produces fumes during combustion, which may impart undesirable flavors to food cooked using such an article. Such fumes would be given off during the entire burning time, which is a considerable drawback to these types of fuels.

Another consideration for combustible fuel is efficient burning. Some fuels release a very large amount of heat during the initial stages, which tapers off to a much lower release rate during the time appropriate for cooking. It would be more efficient, and perhaps safer, to have a fuel whose heat release rate during ignition was less than the release rate during the optimal cooking time. In this way, the heat generated by a fuel would not be wasted in the startup process, but could be utilized in the form of longer cooking times.

By way of example, one commercially-available charcoal-based fuel exhibits the heat-release profile shown in FIG. 1. The graph depicts the rate of heat release per area of material. The graph peaks at 300-350 kilowatts per square meter during ignition of the material, dropping to a steady-state heat-release rate of approximately 40-50 kilowatts per square meter. This represents an initial ignition stage in which a large amount of heat is released very quickly before the release rate ramps down to a state in which cooking is appropriate.

The following prior art reflects the state of the art of which applicant is aware and is included herewith to discharge applicant's acknowledged duty to disclose relevant prior art. It is stipulated, however, that none of these references teach singly nor render obvious when considered in any conceivable combination the nexus of the instant invention as disclosed in greater detail hereinafter and as particularly claimed.

U.S. PATENT DOCUMENTS

<u>PATENT NO.</u>	<u>ISSUE DATE</u>	<u>INVENTOR</u>
2,816,013	December 10, 1957	Powell
2,876,084	March 3, 1959	Leggin

3,068,080	December 11, 1962	Ronzio
3,336,122	April 28, 1964	Smith
3,352,651	November 14, 1967	Davidson
3,395,002	July 30, 1968	Winnicki, et al.
3,431,093	March 4, 1969	Kreinik
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4,822,380	April 18, 1989	Young
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5,427,805	June 27, 1995	Crace
5,468,266	November 21, 1995	Bensalem, et al.
5,912,192	June 15, 1999	Kim, et al.

Kim teaches a three-layer combustible fuel article, comprising three distinct layers: a fire-igniting layer, a fire-catching layer, and a body layer. The body layer contains carbonized wood and a starch binder, and the other layers include less carbonized wood and more easily-ignitable components. Also included are optional air holes and optional grooves for visual appeal. *Inter alia*, Kim specifically recites that "No coal is used in the combustible articles." (col. 2, line 12)

The remaining citations diverge even further from the nexus of the instant invention.

SUMMARY OF THE INVENTION

The present invention addresses all of the most pervasive problems regarding charcoal-type fuels. In its essence, the present invention is embodied in a freestanding fuel article whose top surface is coated with an accelerant comprising [barium nitrate and] sodium nitrate and either barium nitrate or a combination of sodium and potassium nitrates, and in a method for making such a fuel article. The body comprises a homogeneous mixture of wood charcoal, anthracite coal, and a starch binder, and contains regularly-spaced vents that extend through its entire thickness. One of these vents is centrally located and of a cruciform shape. [Above this vent is] If desired, a fuse or lighting tab made out of a combustible material may be located above this vent. Each fuel article is individually wrapped until use, preventing any dissipation of ignition materials during periods of nonuse. After initial ignition, the fuel is ready for cooking in less than five minutes.

The fuel is made by creating mixtures of the body portion and of the accelerant, and then introducing them successively into a forming device, compacting between each step. The vents are formed during the compaction step. The fuel is ejected from the forming device and then dried in a heated environment to remove any excess water from the mixture. The surface of the fuel is smoothed, the fuse or lighting tab, if desired, is applied, and the fuel is then packaged, first individually, and then in groups better suited to larger cooking apparatus.

[When the fuse or tab is lit, ignition is forced at the centrally-located vent.]
Ignition of the fuel occurs by lighting at the centrally-located vent. The fuel may be directly ignited on its accelerant-covered surface, or it may be lighted on a fuse or

lighting tab present at the central location for convenience. This vent has increased surface area due to the corner edges inherent in its shape, allowing quicker and more efficient ignition. The ignited area in the center of the fuel spreads out across the entire coating of accelerant, which includes some of the surface area extending down into the top of each vent. By the time the accelerant is entirely consumed, the body has ignited and continues to burn. The vents through the body allow air to circulate and produce a chimney effect, and also provide preferential burning sites due to their greater surface area. This air circulation allows the body to burn evenly and more completely during its steady-state combustion period than if air circulation were not allowed. The concentration of accelerant at the top of the fuel directs the steady burning of the fuel from the top down.

The addition of anthracite coal to the body composition produces a cleaner-burning fuel than a pure charcoal fuel. The homogeneous dispersion of wood charcoal throughout the coal in the present invention provides a catalytic effect, allowing the coal to burn more easily than it would without the addition of charcoal. Additionally, the fuel according to the present invention has a much lower heat release rate than conventional charcoal fuel articles during the ignition stage, and the heat-release rate is lower during the ignition stage than during the steady-state cooking stage, both of which translate to longer burning times. The [heat] steady-state heat-release rate and the steady-state burning temperature of the fuel according to the present invention are also higher than that of commercially available charcoal fuel articles.

Compare FIG. 1, the profile of a commercially-available fuel material, described above, with FIG. 2, the profile of the fuel according to the present invention. At the

ignition stage, the heat-release rate peaks at approximately 45-55 kilowatts per square meter before briefly dropping, and then increasing to its steady-state rate of approximately 60-65 kilowatts per square meter. This represents a lower release of energy during ignition, which translates into a longer burning time.

OBJECTS OF THE INVENTION

Accordingly, it is a primary object of the present invention to provide a new and novel combustible fuel that is easily lit by an external ignition source.

It is a further object of the present invention to provide a device and method which lends itself easily to methods of mass production.

It is a further object of the present invention to provide a device and method as characterized above which is less susceptible to deterioration of effectiveness before use.

It is a further object of the present invention to provide a device and method as characterized above which provides a longer steady-state response, which is representative of a protracted time for use.

It is a further object of the present invention to provide a device and method as characterized above which releases heat at a lower level at ignition than at steady-state, burning more efficiently to allow optimal cooking.

It is a further object of the present invention to provide a device and method as characterized above that is easy to handle and store.

It is a further object of the present invention to provide a device and method as characterized above that is easily adaptable to heating tasks of varying scope.

It is a further object of the present invention to provide a device and method as characterized above which provides a cleaner burning product than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that achieves a higher steady-state burning temperature than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that is ready for cooking in a very short time, typically about 3-10 minutes.

Viewed from a first vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a second vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, [said] the mixture containing anthracite coal as a component thereof, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a third vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding, and affixing fusing means to [said] the accelerant-covered surface.

Viewed from a fourth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, [said] the forming device having means for creating venting means, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a fifth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, [said] the forming device having means for creating venting means, compacting [said] the mixture to produce a monolith of carbonaceous material having a

fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, [said] the accelerant allowed to coat an interior surface of [said] the venting means, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a sixth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding, and encasing [said] the fuel in a protective covering.

Viewed from a seventh vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, [said] the mixture containing anthracite coal as a component thereof, placing [said] the mixture into a forming device, [said] the forming device having means for creating venting means, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, [said] the accelerant allowed to coat an interior surface of [said] the venting means, pressing [said] the monolith of carbonaceous material

including [said] the accelerant, removing [said] the monolith of carbonaceous material including [said] the accelerant from [said] the forming device, drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding, affixing fusing means to [said] the accelerant-covered surface, and encasing [said] the fuel in a protective covering.

Viewed from an eighth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, and an accelerant, [said] the accelerant disposed on a portion of [said] the surface of [said] the monolith of carbonaceous material.

Viewed from a ninth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a top surface, [said] the carbonaceous material comprising charcoal, starch, and anthracite coal, and an accelerant, [said] the accelerant disposed on [said] the top surface of [said] the monolith of carbonaceous material.

Viewed from a tenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, [said] the carbonaceous material comprising charcoal, a binder, and anthracite coal, and an accelerant, [said] the accelerant disposed on [said] the surface of [said] the monolith of carbonaceous material and [said] the accelerant further including anthracite coal.

Viewed from an eleventh vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a carbonaceous material having a surface, an accelerant, [said] the accelerant on a portion of [said] the surface of

[said] the carbonaceous material, venting means in [said] the carbonaceous material, and fusing means, [said] the fusing means on [said] the portion of [said] the carbonaceous material containing [said] the accelerant.

Viewed from a twelfth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising: a carbonaceous material, [said] the carbonaceous material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of [said] the cylinder defined by a plurality of planes cutting through chords of [said] the circle.

Viewed from a thirteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising a carbonaceous material, [said] the carbonaceous material having zones of designated accelerated heating localized at venting means passing through [said] the carbonaceous material.

Viewed from a fourteenth vantage point, it is an object of the present invention to provide [A] a fuel for barbecuing, comprising in combination: a carbonaceous material having a surface, an accelerant, [said] the accelerant disposed on a portion of [said] the surface of [said] the carbonaceous material, and fusing means, [said] the fusing means disposed on [said] the surface of [said] the carbonaceous material coincidental with [said] the accelerant.

Viewed from a fifteenth [bantage] vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, [said] the monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and an [accelarant] accelerant

coating a [protion] portion of [said] the monolith of carbonaceous material, [said] the accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Viewed from a sixteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein [said] the core comprises 65-90% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of [said] the core, wherein [said] the accelerant comprises 10-35% of the total mass of the fuel.

Viewed from a seventeenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, [said] the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of [said] the core, [said] the accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a eighteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, [said] the core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of [said] the core, [said] the accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a nineteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality

of facets, [said] the core comprising 75-80% of the total mass of the fuel, and an accelerant applied predominantly to at least one facet of [said] the core, [said] the accelerant comprising 20-25% of the total mass of the fuel.

Viewed from a twentieth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, the monolith of carbonaceous material comprising 10-65% wood charcoal, 33-86% anthracite coal, and a binder; and an [accelarant] accelerant coating a portion of the monolith of carbonaceous material, the accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Viewed from a twenty-first vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein the core comprises 65-94% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of the core, wherein the accelerant comprises 6-35% of the total mass of the fuel.

Viewed from a twenty-second vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-third vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of said core, the accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-fourth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 85-95% of the total mass of the fuel, and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 5-25% of the total mass of the fuel.

These and other objects will be made manifest when considering the following detailed specification when taken in conjunction with the appended drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a heat release rate profile for a commercially-available fuel.

Figure 2 is a heat release rate profile for a fuel according to the present invention.

Figures 3A and 3B [is a] are flowcharts of two embodiments of the method according to the present invention.

Figure 4 is a depiction of the introduction of the body mixture into the molding device.

Figure 5 is a depiction of the compacting of the body mixture.

Figure 6 is a depiction of the introduction of the accelerant mixture into the molding device.

Figure 7 is a depiction of the compacting of the accelerant-covered body mixture.

Figure 8 is a depiction of the ejection of the compacted, shaped fuel article.

Figure 9 is a depiction of the method of using the fuel article of the present invention. An optional fuse or lighting tab is present.

Figure 10 is a perspective view of the bottom of the fuel article according to the present invention.

Figure 11 is a top view of the fuel article according to the present invention.

Figure 12 is a bottom view of the fuel article according to the present invention.

Figure 13 is a cutaway view of the section defined in Figure 14.

Figure 14 is a perspective view of a set of six wrapped fuel articles according to the present invention.

Figure 15 is a top view of a set of six wrapped fuel articles according to the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Considering the drawings, wherein like reference numerals denote like parts throughout the various drawing figures, reference numeral 10 as shown in FIG. 9 is directed to the fuel article according to the present invention.

Referring to FIGS. 3A,3B, the flow charts associated with the method of the present invention can be explored. Initially, each component of the fuel is in a separate container. A computer is used to measure and dispense the proper amount of each component into an appropriate mixing tank. The wood charcoal, anthracite coal, [sodium nitrate,] and [barium] nitrates are dry, and the binder mixture is starch preferably combined with water. In one tank, charcoal, coal, and the binder mixture are combined to produce a body mixture, preferably to the consistency of a viscous paste. In a second tank, either charcoal, coal, sodium nitrate, barium nitrate, and the binder mixture (FIG. 3A) or charcoal, sodium nitrate, potassium nitrate, calcium nitrate, and the binder mixture (FIG. 3B) are combined to produce an accelerant mixture. The amount of liquid present in the accelerant mixture may be varied to produce optimal results, as will be explained later in the process.

Referring now to FIGS. 4-8, the construction and operation of the molding device 30 used to form the fuel article 10 can be explored. The molding device 30 has a sleeve 32, to which is attached a base plate 34, preferably a solid plate. The base plate 34 is attached by a pivot to one end of the sleeve 32 such that the base plate 34 pivots outwardly from the sleeve 32, but in the same plane as the opening in the sleeve 32. At the other end of the sleeve is oriented a piston 36 containing shaped rods 38. The rods 38 preferably form and define vents in the fuel article 10, depicted in FIGS. 9-12 as a

centrally-located cruciform-shaped aperture 12, with peripheral circular bores 14 and peripheral elongated slots 16, arranged in an alternating pattern extending radially outward from the centrally-located cruciform-shaped aperture 12.

The molding device 30 is loaded (FIG. 4) with the body mixture to form the monolith 2 that comprises the long-burning body portion of the fuel. The mixture is compacted with the piston 36 (FIG. 5). The rods 38 attached to the piston 36 extend through the mixture to form the venting holes 12-16 in the fuel article 10, the shapes of the venting holes 12-16 corresponding to the various shapes of the rods 38. After the piston 36 is retracted, the accelerant mixture is introduced (FIG. 6) into the molding device 30. The viscosity of the accelerant mixture will determine the extent to which the accelerant penetrates the monolith 2 and the extent to which accelerant is coated within the venting holes 12-16 of the finished product. The piston 36 is again engaged (FIG. 7) for compacting, and the shaped fuel article 4 is then ejected (FIG. 8) through the end opposite of the piston 36, the exit path created by pivoting the base plate 34 outwardly from the sleeve 32.

The shaped fuel articles 4 are then loaded into drying trays, which are put into a kiln for drying. The kiln is preferably tunnel-shaped and extends approximately 40-50 meters. The entrance temperature of this kiln is approximately 150°C, and the air is dry. This atmosphere is maintained for 6.5 to 7 hours, at which time they are removed. The exit temperature is a very moist 50-60°C. The fuel article is then smoothed, and a fuse 18, formed as a substantially circular disc of fibrous material, is attached on a surface which had received the accelerant mixture. The fuse 18 is centrally-located on the fuel, above the cruciform-shaped aperture 12. The fuel article 10 is then packaged in

a protective layer 20, preferably plastic shrinkwrap. After each fuel article 10 is individually encased, as shown in FIGS. 10-13, a set of six fuel articles 25 (each individually wrapped) is arranged in a circular orientation, and the unit is wrapped as a set in a second protective layer 20, as in FIGS. 14-15.

The finished fuel article 10 is cylindrically-shaped. Referring to FIG. 11, the cross section of the short axis of the article 10 is preferably defined by a circle from which two portions have been excised. The excised portions are defined by two planes 22 coincidental with two chords of the circle. The planes 22, when extrapolated, form an included angle of approximately 30°. This angle permits orientation of six such articles to define a circle about a center portion which is free of the cooking medium. This center portion of the circle is the optimal area for cooking. If food is cooked over this center portion, drippings from the barbecued item will not drip onto the coals and produce smoke or other undesirable effects which tend to adversely affect the flavor of the barbecued item. Cooking directly over the fuel article 10 subjects the barbecued item to greater heat overall, which leads to greater cooking control when using fuel articles of the present invention.

The accelerant mixture includes barium and sodium nitrates, which are oxidizers that serve to ignite the body portion of the fuel article 10. When the accelerant mixture is applied and the resulting mass compacted, the accelerant mixture flows into the venting holes 12-16. The degree to which the inside surface is coated is directly related to the viscosity of the accelerant mixture. This process produces zones of designated accelerated heating, which include the accelerant-covered top surface, the profile of each of the venting holes 12-16 in the accelerant-covered surface, and the circumscribing

peripheral walls of the fuel article 10. Thus, the function of the centrally-located cruciform-shaped aperture 12 is to provide a surface that is more conducive to ignition than the rest of the fuel article 10. Ignition at the centrally-located cruciform-shaped aperture 12 is preferable due to the increased surface area provided by the several corners defined inside the vent. These areas are more conducive to ignition than any other area of the fuel article 12, having a greater surface area relative to its size. After ignition at the center, burning of the accelerant coating continues radially outward, due to the substantially even coating of the accelerant provided by the method of the present invention. When the burning contacts the peripheral venting holes 13-16, a similar phenomenon occurs, providing uniform burning by virtue of the substantially even spacing of the venting hold 13-16. Because all of the venting holes 12-16 extend through the entire fuel article 10, enhanced airflow is provided, encouraging even top-to-bottom burning of the fuel article 10. The inclusion of anthracite coal in the body of the fuel article 10 provides cleaner burning than charcoal alone, which is also useful in avoiding off-flavors and odors in the barbecued item.

The following tables reflect[s] the general ranges for both the accelerant components and body components. The tables also reflect[s] the preferred formulation for a specific briquette.

FORMULATION 1:

accelerant components	general ranges	specific briquette
weight percent	10-35%	20%
wood charcoal	45-80%	53%
anthracite coal	1-20%	10%
barium nitrate	10-32%	31%
sodium nitrate	0.05-5%	4%
star[t]ch (binder)	1-2.5%	2%
TOTAL COMPONENT %	N / A	100%

body components	general ranges	specific briquette
weight percent	65-90%	80%
wood charcoal	10-65%	33.50%
anthracite coal	35-90%	62.50%
star[t]ch (binder)	2.5-5%	4%
TOTAL COMPONENT %	N / A	100%

FORMULATION 2:

<u>accelerant components</u>	<u>general ranges</u>	<u>specific briquette</u>
<u>weight percent</u>	<u>6-35%</u>	<u>10.7%</u>
<u>wood charcoal</u>	<u>48-92.4%</u>	<u>78%</u>
<u>calcium nitrate</u>	<u>3.05-22%</u>	<u>10.4%</u>
<u>potassium nitrate</u>	<u>2.5-22%</u>	<u>8%</u>
<u>sodium nitrate</u>	<u>0.05-4%</u>	<u>1.6%</u>
<u>starch (binder)</u>	<u>2-4%</u>	<u>2%</u>
TOTAL COMPONENT %	N/A	100%

<u>body components</u>	<u>general ranges</u>	<u>specific briquette</u>
<u>weight percent</u>	<u>65-94%</u>	<u>89.3%</u>
<u>wood charcoal</u>	<u>10-65%</u>	<u>23%</u>
<u>anthracite coal</u>	<u>33-86%</u>	<u>75%</u>
<u>starch (binder)</u>	<u>2-4%</u>	<u>2%</u>
TOTAL COMPONENT %	N/A	100%

Moreover, having thus described the invention, it should be apparent that numerous structural modifications and adaptations may be resorted to without departing from the scope and fair meaning of the instant invention as set forth hereinabove and as described hereinbelow by the claims.

ABSTRACT OF THE DISCLOSURE

A fuel article, suitable for barbecuing, allowing greater burning efficiency and the method of making such a fuel article. The fuel article includes anthracite coal for cleaner burning and utilizes an accelerant covering containing nitrates to be amenable to easy ignition.



Bracketed and Underlined Claims under 37 C.F.R. §1.121

Claim 19 (amended) - The fuel of claim 18 wherein said accelerant comprises
[[range]] 10-32% barium nitrate and 0.05-5% sodium nitrate.

Claim 32 (amended) - A fuel for barbecuing, comprising, in combinat[u]ion:
a monolith of carbonaceous material, said monolith of carbonaceous
material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and
an accelerant coating a portion of said monolith of carbonaceous material,
said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5%
sodium nitrate, 1-20% anthracite coal, and a binder.

Copy of All Pending Claims

Claim 1 - A method of making a fuel for barbecuing, the steps including:

- forming a mixture including liquid and carbonaceous material,
- placing said mixture into a forming device,
- compacting said mixture to produce a monolith of carbonaceous material having a fixed form,
- introducing an accelerant into said forming device containing said monolith of carbonaceous material,
- pressing said monolith of carbonaceous material including said accelerant,
- and
- drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 2 - A method of making a fuel for barbecuing, the steps including:

- forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof,
- placing said mixture into a forming device,
- compacting said mixture to produce a monolith of carbonaceous material having a fixed form,
- introducing an accelerant into said forming device containing said monolith of carbonaceous material,
- pressing said monolith of carbonaceous material including said accelerant,
- and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 3 - A method of making a fuel for barbecuing, the steps including:
forming a mixture including liquid and carbonaceous material,
placing said mixture into a forming device,
compacting said mixture to produce a monolith of carbonaceous material having a fixed form,
introducing an accelerant into said forming device containing said monolith of carbonaceous material,
pressing said monolith of carbonaceous material including said accelerant,
drying said monolith of carbonaceous material such that said fixed form is freestanding, and
affixing fusing means to said accelerant-covered surface.

Claim 4 - A method of making a fuel for barbecuing, the steps including:
forming a mixture including liquid and carbonaceous material,
placing said mixture into a forming device, said forming device having means for creating venting means,
compacting said mixture to produce a monolith of carbonaceous material having a fixed form,
introducing an accelerant into said forming device containing said monolith of carbonaceous material,
pressing said monolith of carbonaceous material including said accelerant,
and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 5 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 6 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant,

drying said monolith of carbonaceous material such that said fixed form is freestanding, and

encasing said fuel in a protective covering.

Claim 7 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means,

pressing said monolith of carbonaceous material including said accelerant,

removing said monolith of carbonaceous material including said accelerant from said forming device,

drying said monolith of carbonaceous material such that said fixed form is freestanding,

affixing fusing means to said accelerant-covered surface, and

encasing said fuel in a protective covering.

Claim 8 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a surface, and

an accelerant, said accelerant disposed on a portion of said surface of said monolith of carbonaceous material.

Claim 9 - The fuel of claim 8 further comprising fusing means disposed on said accelerant-covered surface of said monolith of carbonaceous material.

Claim 10 - The fuel of claim 8 wherein said monolith of carbonaceous material includes anthracite coal.

Claim 11 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a top surface, said carbonaceous material comprising charcoal, starch, and anthracite coal, and

an accelerant, said accelerant disposed on said top surface of said monolith of carbonaceous material.

Claim 12 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a surface, said carbonaceous material comprising charcoal, a binder, and anthracite coal, and

an accelerant, said accelerant disposed on said surface of said monolith of carbonaceous material and said accelerant further including anthracite coal.

Claim 13 - A fuel for barbecuing, comprising, in combination:

a carbonaceous material having a surface,

an accelerant, said accelerant on a portion of said surface of said carbonaceous material,

venting means in said carbonaceous material, and

fusing means, said fusing means on said portion of said carbonaceous material containing said accelerant.

Claim 14 - The fuel of claim 13 wherein said fusing means overlies one of said venting means.

Claim 15 - The fuel of claim 14 wherein said venting means located under said lighting tab is a cruciform shaped-aperture.

Claim 16 - The fuel of claim 15 wherein said cruciform-shaped aperture located under said fusing means is centrally-located in said accelerant-covered portion of said carbonaceous material.

Claim 17 - The fuel of claim 16 wherein said carbonaceous material comprises anthracite coal and wood charcoal.

Claim 18 - The fuel of claim 17 wherein said carbonaceous material comprises 35-90% of anthracite coal and 10-65% of wood charcoal.

Claim 19 - The fuel of claim 18 wherein said accelerant comprises 10-32% barium nitrate and 0.05-5% sodium nitrate.

Claim 20 - The fuel of claim 19 wherein said fuel is formed into a substantially circular shape.

Claim 21 - The fuel of claim 20 wherein said substantially circular shape further includes a plurality of chords defining portions to be removed.

Claim 22 - The fuel of claim 21 wherein said plurality of chords is located on one half of said substantially circular shape.

Claim 23 - The fuel of claim 22 wherein said plurality of chords further includes endpoints of a diameter of said substantially circular shape.

Claim 24 - The fuel of claim 23 wherein said venting means comprise a plurality of circular bores.

Claim 25 - The fuel of claim 24 wherein said venting means further comprise a plurality of elongated slots.

Claim 26 - The fuel of claim 25 wherein said plurality of circular bores and said plurality of elongated slots are arrayed in an alternating pattern radiating outward from said centrally-located cruciform-shaped aperture.

Claim 27 - A fuel for barbecuing, comprising:

a carbonaceous material, said carbonaceous material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of said cylinder defined by a plurality of planes cutting through chords of said circle.

Claim 28 - The fuel of claim 27 wherein said plurality of planes is two, having an included angle of 30°, allowing nesting in a substantially toroidal shape.

Claim 29 - A fuel for barbecuing, comprising:

a carbonaceous material, said carbonaceous material having zones of designated accelerated heating localized at venting means passing through said carbonaceous material.

Claim 30 - The fuel of claim 29 wherein said zones of designated accelerated heating include a circumscribing peripheral wall of said fuel and bores passing through said fuel defining said venting means and having an accelerant thereon.

Claim 31 - A fuel for barbecuing, comprising in combination:

a carbonaceous material having a surface,

an accelerant, said accelerant disposed on a portion of said surface of said carbonaceous material, and

fusing means, said fusing means disposed on said surface of said carbonaceous material coincidental with said accelerant.

Claim 32 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Claim 33 - A fuel for barbecuing, comprising, in combination:

a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core comprises 65-90% of the total mass of the fuel, and

an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 10-35% of the total mass of the fuel.

Claim 34 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Claim 35 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Claim 36 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 75-80% of the total mass of the fuel, and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 20-25% of the total mass of the fuel.

Claim 37 - The fuel of claim 17 wherein said carbonaceous material comprises 33-86% of anthracite coal and 10-65% of wood charcoal.

Claim 38 - The fuel of claim 18 wherein said accelerant comprises 3.05-22% calcium nitrate, 2.5-22% potassium nitrate and 0.05 - 4% sodium nitrate.

Claim 39 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 32-86% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Claim 40 - A fuel for barbecuing, comprising, in combination:

a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core comprises 65-94% of the total mass of the fuel, and

an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 6-35% of the total mass of the fuel.

Claim 41 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Claim 42 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Claim 43 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 85-95% of the total mass of the fuel, and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 5-25% of the total mass of the fuel.